

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Shultz et al. )  
Serial No.: Not Yet Assigned ) Attorney Docket:  
DIV of 09/406,147 ) 6868/81579  
 ) PRO-105.0 DIV I  
 )  
Filed: February 9, 2001 )  
 ) Art Group:  
For: EXOGENOUS NUCLEIC ACID DETECTION ) Not yet assigned  
 )  
Examiner: Not yet assigned )

PRELIMINARY AMENDMENT

Commissioner for Patents  
Washington, D.C. 20231

Sir:

This paper is a preliminary Amendment to cancel the claims of the originally-filed parent application that are drawn to non-elected groups. Please enter this Preliminary Amendment and amend the accompanying application as follows.

IN THE SPECIFICATION:

Please replace the "Cross-References to Related Applications" section with the following.

--CROSS-REFERENCE TO RELATED APPLICATIONS

This application is a division of allowed U.S. Patent application Serial No. 09/406,147 filed September 27, 1999,

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[illegible]

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which is a continuation-in-part of allowed U.S. Patent application Serial No. 09/358,972 filed July 21, 1999, which is a continuation-in-part of U.S. Patent Application Serial No. 09/252,436 filed February 18, 1999, now U.S. Patent No. 6,159,693 issued December 12, 2000, which is a continuation-in-part of allowed 09/042,287, filed March 14, 1998.--

IN THE CLAIMS

Please cancel claims 1-42 and 57-72.

Please amend claim 55 so that it reads as follows.

55. (Amended) The composition of matter according to claim 53, wherein said purified and isolated enzyme whose activity in the presence of pyrophosphate is to release identifier nucleotides is a thermostable polymerase.

REMARKS

Continued prosecution and consideration of the claimed subject matter in the accompanying patent application is respectfully requested.

I. The Application

The enclosed application is a true copy of the application filed for 09/406,147, filed September 27, 1999, with

the exception of the current mailing label number on the front page of the specification.

## II. The Amendments

A restriction requirement in the parent case, U.S. Patent Application Serial No. 09/406,147 filed September 27, 1999, divided the claims into the two groups listed below.

Group I: claims 1-42 and 57-72

Group II: claims 43-56

In this divisional application of the allowed parental application, the second group of claims are elected for examination. As a result, claims 1-42 and 57-72 were cancelled.

It is noted that claims 23-24, 67 and 70-72 were cancelled without prejudice toward further prosecution during the prosecution of the parental case. We reserved the right to examine those claims at a later date.

Claim 55 was amended to correct an inadvertent, obvious typographical error. A copy of the requested claim amended showing the requested claim changes is enclosed.

Claims 43-56 are in the case and are before the Examiner. It is thus seen that no new matter has been presented. A complete, clean copy of the claims before the Examiner is enclosed herewith.

## SUMMARY

The claims corresponding to the non-elected group of claims were cancelled in this division application in which Group II (claims 43-56) is elected for examination. An obvious typographical error in claim 55 was corrected.

The application is believed to be in condition for allowance. An early notice to that effect is earnestly solicited.

A filing fee is enclosed based on the number of independent and dependent claims in the application after entry of the Preliminary Amendment. No further fee or petition is believed to be necessary. However, should any further fee be needed, please charge our Deposit Account No. 23-0920, and deem this paper to be the required petition.

The Examiner is requested to phone the undersigned should any questions arise that can be dealt with over the phone to expedite this prosecution.

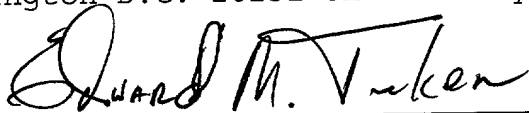
Respectfully submitted,

  
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CERTIFICATE OF EXPRESS MAILING

I hereby certify that this Preliminary Amendment together with the stated enclosures are being deposited with the United States Postal Service with Express Mailing Label No. EL769849422US in an envelope addressed to: Commissioner for Patents, Washington D.C. 20231 on February 9, 2001.

  
Edward M. Vinken

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Enclosures:

Utility Patent Application Transmittal (1pg)  
Application Data Sheet (6pgs)  
Fee Transmittal (1pg)  
Check No. 066239 in the amount of \$710.00  
Copy of Spec., claims & Abstract of 09/406,147 (194 pg)  
Copy of executed Decl./Power of Atty. for 09/406,147 (12 pg)  
Copy of Formal Drawings of 09/406,147 (2 pg)  
Copy of Sequence Listing of 09/406,147 (29 pg)  
Statement under 37 C.F.R. 1.821(e&f)  
Photocopy of CRF for 09/406,147 (1 pg)  
Copy of Recorded Assignment of 09/406,147 (11 pg)  
Information Disclosure Statement (4 pgs)  
Form PTO-1449 (7 pgs)

09/406,147

WHAT IS CLAIMED IS:

43. A kit for determining the presence or absence of a predetermined exogenous nucleic acid target sequence in a nucleic acid sample comprising:

(A) a purified and isolated enzyme whose activity is to release one or more nucleotides from the 3' terminus of a hybridized nucleic acid probe; and

(B) a nucleic acid probe, said nucleic acid probe being complementary to a predetermined exogenous nucleic acid target sequence.

44. The kit according to claim 43 wherein the predetermined exogenous nucleic acid probe sequence is species-specific.

45. The kit according to claim 44 wherein the nucleic acid probe comprises one of the following nucleic acid sequences or their complementary sequences:

5' CCAGACGCCTCA 3' SEQ ID NO:86;  
5' ACCTTCACGCCA 3' SEQ ID NO:87;  
5' TGCCGAGACGT 3' SEQ ID NO:88;  
5' GCAGACACATCC 3' SEQ ID NO:89;  
5' GGAATCTCCACG 3' SEQ ID NO:90;  
5' ACATACACGCAA 3' SEQ ID NO:91; and  
5' ATATGCACGCAA 3' SEQ ID NO:92.

46. The kit according to claim 43 wherein the predetermined nucleic acid target sequence is associated with a pathogen.

47. The kit according to claim 46 wherein the nucleic acid probe comprises one of the following nucleic acid sequences or their complementary sequences:

5'CGTTGTGCGGGTTCACGTCGATGAGCACGT  
TCATGGGTGTAATATCAAAGTGGCATAACGAGCT 3' SEQ ID NO:82

5'CACTTTGATATTACACCCATG 3' SEQ ID NO:35

5' TCACACAGGAAACAGCTATGACCATG 3' SEQ ID NO:41

5' CTGCTAGCCGAGTAGTGTGGGTCGCGAAAGGCCTTGTGG 3'  
SEQ ID NO:43

5' CCATTTAGTACTGTCT 3' SEQ ID NO:52

5' CTAGTTTTCTCCATTT 3' SEQ ID NO:54

5' TTCTCTGAAATCTACT 3' SEQ ID NO:56

5' AAAAAAGACAGTACTAAATGGAGAAACTAGTA  
GATTCAGAGAACTTAA 3' SEQ ID NO:58

5' CACTTTGATATTACACCCGTG 3' SEQ ID NO:36

5'CGTGTATGCCACTTTGATATTACACCCGTGAACGTGCTCATCGACGTGAAC  
CCGCACAACGAGCT 3' SEQ ID NO:83

5'CGTTGTGCGGGTTCACGTCGATGAGCACGTTACGGGTGTAATATCAAAGT  
GGCATAACGAGCT3' SEQ ID NO:84

5'CGCTTCTACCACGAATGCTCGCAGACCATGCTGCACGAAT  
ACGTCAGAAAGAACGTGGAGCGTCTGTTGGAGCT 3' SEQ ID NO:1



5' GCAACTACACCTGCGCCTAAAGTAGCAGAA 3' SEQ ID NO:11

5' TTCTGCTACTTTAGGCGCAGGTGTAGTTCG 3' SEQ ID NO:12

5' CATCGACGGCAACCTCGGAGACTTACGAGATATTTTGAAAAA  
GGCGCTACTTTTAATCGAGAAACACCA 3' SEQ ID NO:13

5' TGGTGTTCCTCGATTAAAAGTAGCGCCTTTTTTCAAATATCT  
CGTAAGTCTCCGAGGTTGCCGTCGATG 3' SEQ ID NO:14

5' CTCGGAGACTTACGAGATATTTTGAAAAA 3' SEQ ID NO:15

5' TTTTTTCAAATATCTCGTAAGTCTCCGAG 3' SEQ ID NO:16

5' TGTGTAATGAAAGAAATCACCGTCACTGAA 3' SEQ ID NO:19

5' TTCAGTGACGGTGATTTCTTTCATTACACA 3' SEQ ID NO:20

5' CTTGAAGCATAGTTCTTGTTTTTAACTTTGTCCATCTT  
GAGCCGCTTGAGTTGCCTTAGTTTTAATAGT 3' SEQ ID NO:31

5' ACTATTAAACTAAGGCAACTCAAGCGGCTCAAGATGGACAAAGTTTAAAA  
ACAAGAACTATGCTTCAAG 3' SEQ ID NO:33

5' AGTTCTTGTTTTTAACTTTGTCCATCTTG 3'  
SEQ ID NO:32

5' CAAGATGGACAAAGTTTAAAAACAAGAACT 3'  
SEQ ID NO:34

48. The kit according to claim 43 wherein  
said nucleic acid probes comprise a fluorescent  
label.

49. The kit according to claim 43 wherein said nucleic acid probes comprise a non-natural nucleotide analog.

50. The kit according to claim 43 further comprising pyrophosphate.

51. The kit according to claim 43 further comprising a nucleotide diphosphate kinase.

52. The composition according to 51, wherein said nucleoside diphosphate kinase is that encoded by *Pyrococcus furiosus*.

53. A composition for determining the presence or absence of a plurality of predetermined nucleic acid target sequences in a nucleic acid sample comprising an aqueous solution that contains:

(A) a purified and isolated enzyme whose activity is to release one or more nucleotides from the 3' terminus of a hybridized nucleic acid probe; and

(B) a plurality of nucleic acid probes, each of said nucleic acid probes being complementary to a predetermined nucleic acid target sequence.

54. A composition of matter for determining the presence or absence of a plurality of predetermined nucleic acid target sequences in a nucleic acid sample comprising an aqueous solution that contains:

(A) a purified and isolated enzyme whose activity in the presence of pyrophosphate is to

release identifier nucleotide as a nucleoside triphosphate from hybridized nucleic acid probe;

(B) adenosine 5' diphosphate;

(C) pyrophosphate;

(D) a purified and isolated nucleoside diphosphate kinase; and

(E) a plurality of nucleic acid probes, each of said nucleic acid probe being complementary to its respective predetermined nucleic acid target sequence.

55. (Amended) The composition of matter according to claim 181, wherein said purified and isolated enzyme whose activity in the presence of pyrophosphate is to release identifier nucleotides is a thermostable polymerase.

56. The composition of matter according to claim 53, wherein said purified and isolated nucleoside diphosphate kinase is that encoded by *Pyrococcus furiosus*.